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10/778,021	02/17/2004	Kristen L. Watkins	RIC99071C1	6175

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EXAMINER

FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2128

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/26/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/26/2007.

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Office Action Summary

Application No.

10/778,021

Applicant(s)

WATKINS ET AL.

Examiner

Fred Ferris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>20070312</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. *This Supplemental Office Action is responsive to applicant's Preliminary Amendment filed 9 June 2004 and supercedes the previous Office Action of 27 September 2006. Claims 1-27 are cancelled. Claims 28-55 are currently pending in this application and stand rejected by the examiner.*

Drawings

2. *The drawings are objected to because they are informal and therefore acceptable for examination purposes only. New formal drawings will be required when claims are allowed.*

The drawings are further objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

MPEP Section 608.02(d) [R-2] "Complete Illustration in Drawings" recites the following:

"37 CFR 1.83. Content of drawing.

(a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation"

In this instance, the drawings are objected to as not showing all of the claimed elements. For example, the claimed demand input structure, model generator, optimization processor, and updating means are not disclosed in the drawings.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-27 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter.

Per claims 37-55: The Examiner submits that, in view of the language of the claims, independent method claim 37 does not appear to recite a concrete and tangible result. In this case the result appears to merely be an updating of model parameter (i.e. numbers) resulting from the recited method steps. The examiner submits that in order to establish a practical application, there must be either a physical transformation, or a useful, concrete and tangible result. Data transformation is not the same as a physical transformation. In this instance, there does not appear to be a concrete and tangible result. Here, the result of "updating said network model and said cost function" is simply a mathematical computation resulting in an un-stored and un-applied number, not a

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physical transformation. "Updating", in this case, is a thought or computation, and not in and of itself a tangible result. It is not until the result is applied in a meaningful way that it has real world value and becomes a tangible result. For example, there does not appear to be a tangible result that is specifically applied to achieve the intended "optimally deploying" of network equipment in a network" as recited in the preamble of the claim.

MPEP 2106 recites the following:

*"A. Identify and Understand Any Practical Application Asserted for the Invention
The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and **tangible result**." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "**real world**" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). Accordingly, a complete disclosure should contain some indication of the practical application for the claimed invention, i.e., why the applicant believes the claimed invention is useful.*

Apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application.

Although the courts have yet to define the terms useful, concrete, and tangible in the context of the practical application requirement for purposes of these guidelines, the following examples illustrate claimed inventions that have a practical application because they produce useful, concrete, and tangible result:

*- Claims drawn to a long-distance telephone billing process containing mathematical algorithms were held to be directed to patentable subject matter because "the claimed process applies the Boolean principle to produce a useful, concrete, **tangible result** without pre-empting other uses of the mathematical principle." AT & T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999);*

- "[T]ransformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result" -- a final share price momentarily fixed for recording

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and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601; and

- Claims drawn to a rasterizer for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means were held to be directed to patentable subject matter since the claims defined "a specific machine to produce a useful, concrete, and **tangible result**." *In re Alappat*, 33 F.3d 1526, 1544, 31 USPQ2d 1545, 1557 (Fed. Cir. 1994).

A process that consists solely of the manipulation of an **abstract idea is not concrete or tangible**. See *In re Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also *Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459. Office personnel have the burden to establish a prima facie case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. 101. Compare

***Musgrave*, 431 F.2d at 893, 167 USPQ at 289; *In re Foster*, 438 F.2d 1011, 1013, 169 USPQ 99, 101 (CCPA 1971).** Further, when such a rejection is made, Office personnel must expressly state how the language of the claims has been interpreted to support the rejection."

In this case, independent claim 37 does not recite a concrete and tangible result since the updating is merely a calculated numerical representation for "a model" that is not directly applied to accomplish the intended "optimally deploying (of) network equipment". Dependent claims inherit the defects of the claims from which they depend.

Per claims 28-36: *The Examiner submits that the claims as written, are merely drawn to a "system" that consists of entirely of nonstatutory descriptive material. (i.e. software per se) In this instance, the claimed demand input structure, model generator, optimization processor, means for sorting, means for transforming and updating means, for example, appear to simply be software components that are not structurally and functionally interrelated as a computer component.*

MPEP 2106 recites the following supporting rational for this reasoning:

"Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and

Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data. **Both types of "descriptive material" are nonstatutory when claimed as descriptive material per se.** Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is **recorded on some computer-readable medium** it becomes structurally and **functionally interrelated to the medium** and will be **statutory in most cases since use of technology permits the function of the descriptive material to be realized.**"

Dependent claims inherit the defect of the claims from which they depend.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. *Claims 28-55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.*

Specifically, independent claims 28 and 37 include the elements such as a demand input structure, model generator, optimization processor, and updating, sorting and transforming means that do not appear to be explicitly disclosed in the specification. While page 12 of the specification, for example, discloses that demand input information may comprise a demand table, it does not appear to specifically define a demand input structure or demand input data structure as claimed. Is the claimed "demand input structure" simply the table of Figure 8B? Similarly, the specification does not appear to explicitly disclose a model generator or optimization processor. Again page 15 of the

specification makes reference to a network model, and an optimization process, but no specific model generator or optimization processor appear to be disclosed in either the specification or the Figures. Likewise, the specific means for updating, sorting and transforming, as claimed, does not appear to be specifically defined by the specification. Accordingly, a skilled artisan would be at odds to make and/or use the claimed invention from written description of the related subject matter contained in the specification. The examiner requests clarification of the definition of the above referenced claim terms based on the information provided in the disclosure. Dependent claims inherit the defect of the claims from which they depend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. *Claims 28-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Network Simulations with OPNET”, X. Chang, Proceedings of 1999 Winter Simulation Conference, IEEE 1999.*

Regarding independent claims 28 and 37: Chang discloses the commercially available OPNET Modeler network simulator and modeling tool used for the development and analysis of communications networks. (pp. 308, Section 2.0, pp. 309, Section 2.1.1) Chang further discloses the OPTNET Modeler operating as a network

simulation system providing simulated hardware running on standard workstations with graphical capabilities (pp. 308, paragraph 2, Section 2.0, pp. 311, Section 3.0, Figs. 1-3, 8-10). The OPNET Modeler provides a GUI based user interface for developing a simulated network model including a Network Editor, Node Editor, Process Editor, Simulation & Debugging tool, Probe editor, Analysis tool, Filter tool, Animation tool, and a Model Library that includes models for popular network architectures (fiber optic, LAN, Ethernet, x.25, etc.) and models for popular vendor network hardware (routers, amplifiers, etc.). OPNET Modeler therefore allows the user to fully define and simulate the functionality of a simulated network and related components. (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Model Library, Standard Models)

Chang discloses the following elements of the present invention:

- **model generation based on demand (input structure):** via a **network model** for **simulating and defining functionality of simulated network** and in communication with hardware interface: The OPNET Modeler provides a GUI based user interface for developing a simulated network model capable of redirecting, and translating network communication including a Network Editor, Node Editor, Process Editor, Simulation & Debugging tool, Probe editor, Analysis tool, Filter tool, Animation tool, and a Model Library that includes models for popular network architectures (fiber optic, LAN, Ethernet, x.25, etc.) and models for popular vendor network hardware (routers, amplifiers, etc. i.e. simulated hardware) for simulating the **functionality of network components**. (Chang: pp. 308, paragraph 2, Section 2.0, pp. 311, Section 3.0, Figs. 1-3, 8-10, also see:

OPNET Modeler product brochure, Mil 3 Inc., 1999, Model Library, Standard Models) In particular, the Simulation Editor of section 2.2.1 provided the functionality of a demand input structure by allowing the simulation of time-based network behavioral characteristics (e.g. based on demand, Section 2.2.1, Figs.3-14) and program the ability to sort demand by time points and transform network models (Figs. 1, 3, 8-10).

- **updating and optimization means:** by user interface for entering commands for creating simulated network, defining topology of said simulated network, and invoking simulated network, and thereby updating and optimizing the network model. Chang discloses a user interface for setting up network performance criteria values (power, s/n ratio, etc.) using OPNET's Network Model and Simulation Editor. (page 309, Section 2.1.1, 2.2.1) Chang further discloses OPNET's Node Editor for creating and modeling components (modules) that make up the optical network. (page 309, sections 2.1.1 and 2.1.2) OPNET's Model Library includes models for popular vendor hardware component (devices) modules and allows the user to fully define and simulate the functionality of a simulated network and related components. (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models, Vendor Device Models) The network model of section 2.1.1 is further updated during simulation.

Chang further discloses a simulator library providing application programmers interface for creating simulated network defining functionality of network and in communication with network simulator and user interface: The OPNET Model

(simulator) disclosed by Chang includes a model library includes for popular network architectures (fiber optic, LAN, Ethernet, x.25, etc.) and models for popular vendor network hardware elements (e.g. equipment such as routers, amplifiers, etc. i.e. simulated hardware). (Chang: pp. 309, sections 2.1.1 - 2.1.3, also see: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models)

Per claims 29 and 50: Chang discloses a multi-nodal (graph) model of the network (Section 2.1.2, Figs. 3, 8, 10).

Per claims 30-32, and 39-41: Chang teaches modeling the effects of channel rate between sites (Sections 2.3.1, 3.0).

Per claims 33-36, 38, 42-45, 51-55: In this instance, the recited priority demands are simply demand quantities (specification page 13, paragraph 2) and would have knowingly been implemented (programmed) by a skilled artisan as method organizing demand time points. Such programming features are available to OPNET via the node model and simulation editor cited above. (Section 2.2.1, Figs.3-14)

Per claims 46-49: Network equipment such as Add/drop multiplexers are standard features of the OPNET library. (Chang: pp. 309, sections 2.1.1 - 2.1.3, also see: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models) Cost function and Integer programming would be inherent features to the OPNET Modeler.

Accordingly, a skilled artisan having access to the teachings of Chang at the time of the invention would have known to program the commercially available OPNET software package to realize the claimed elements of the present invention. An obvious motivation exists since Chang sets forth that network simulators can be used to model

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nearly any performance related network study while removing the burden of trial and error hardware approaches (Section 1).

Conclusion

6. *The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, careful consideration should be given prior to applicant's response to this Office Action.*

US Patent 6,983,277 issued to Thalhammer-Reyero teaches maintaining and updating virtual models of complex systems.

US Patent 6,909,700 issued to Benmohamed et al teaches network planning using environmental data models.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached at 571-272-2279. The Official Fax Number is: (571) 273 8300

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